

CLAIMS

What is claimed is

5           1.     An apparatus for separating luminance and chrominance signals, the apparatus comprising:

            first, second, third, and fourth delayers connected to a digital composite video signal in series, the first, second, third, and fourth delayers for delaying input signals each by 1 horizontal period;

10           a first filter for separating a first chrominance signal from signals output from the first and second delayers;

            a second filter for separating a second chrominance signal from signals output from the second and third delayers;

15           a vertical edge direction detector for detecting a vertical edge direction based on signals output from the second and fourth delayers and the digital composite video signal;

            a multiplexer for outputting one of the first and second chrominance signals according to a signal output from the vertical edge direction detector;

20           a chrominance signal outputting unit for receiving the signal output from the multiplexer and for outputting a perfect chrominance signal; and

            a luminance signal outputting unit for receiving the signal output from the second delayer and the perfect chrominance signal and for outputting a perfect luminance signal.

25           2.     The apparatus of claim 1, wherein the first and second filters are each comb filters.

            3.     The apparatus of claim 1, wherein the first filter comprises:

            a first subtractor for subtracting the signal output from the first delayer from the

30           signal output from the second delayer; and

a first divider for dividing a signal output from the first subtractor by 2 and outputting a signal output from the first filter.

4. The apparatus of claim 1, wherein the second filter comprises:

a second subtractor for subtracting the signal output from the third delayer from the signal output from the second delayer; and

a first divider for dividing a signal output from the second subtractor by 2 and outputting a signal output from the second filter.

5. The apparatus of claim 1, wherein the vertical edge direction detector comprises:

a third subtractor for subtracting the signal output from the fourth delayer from the signal output from the second delayer;

a fourth subtractor for subtracting the digital composite video signal from the signal output from the second delayer;

a first absolute value calculator for calculating an absolute value of signals output from the third subtractor;

a second absolute value calculator for calculating an absolute value of signals output from the fourth subtractor; and

a comparator for comparing the absolute values output from the first and second absolute value calculators.

6. The apparatus of claim 1, wherein the chrominance signal outputting unit comprises:

a low-pass filter for filtering the output of the multiplexer; and

a first limiter for limiting the output of the low-pass filter to a predetermined magnitude to output a perfect chrominance signal.

7. The apparatus of claim 1, wherein the luminance signal outputting unit comprises:

a subtractor for subtracting the chrominance signal from the signal output from the second delayer to separate a luminance signal; and

a second limiter for limiting the luminance signal output from the subtractor to a predetermined magnitude to output a perfect luminance signal.

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8. The apparatus of claim 1, wherein the first through fourth delayers each comprise line memories.